

January 26, 2017

## CURRICULUM VITAE FOR PER CHRISTIAN HANSEN

**Professor Per Christian Hansen** has worked with numerical regularization algorithms for 30 years, has published 100 papers in leading journals, and his books on numerical methods for inverse problems are widely used. He has developed several related software packages, of which REGULARIZATION TOOLS (now in its 4th version) is a popular toolbox for analysis and solution of discrete inverse problems. His H-INDEX is 45 according to Google Scholar (January 2017) and he is a SIAM Fellow.

His current research projects involve *algorithms for tomographic reconstruction* (joint with DTU Physics), *electrical impedance tomography with hybrid data*, and *iterative image deblurring algorithms* (joint with Emory University, Atlanta, USA, and Tufts University, Boston, USA).

**Full name:** Per Christian Hansen.

**Title:** Professor in Scientific Computing.

**Born:** July 9, 1957 in Nyborg, Denmark. **Citizenship:** Danish.

**Family:** Children: Martin S. Neukirch (born 1991) and Sara B. Neukirch (born 1994).

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**Work:** DTU Compute (Department of Applied Mathematics and Computer Science), Section for Scientific Computing, Technical University of Denmark, DK-2800 Lyngby. Phone: +45 45.25.33.51. Direct: +45 45.25.30.97. Email: [pcha@dtu.dk](mailto:pcha@dtu.dk). URL: [www.compute.dtu.dk/~pcha](http://www.compute.dtu.dk/~pcha).

**Specialization:** Numerical algorithms for inverse problems, imaging and tomography, matrix computations, subspace methods in signal processing, high-performance scientific computing.

### Education

- 1977–1982: MSc student at the Technical University of Denmark (DTU).
- 1982–1984: PhD student at the Department of Numerical Analysis, DTU.

### Degrees

- 1982: MSc in Electrical Engineering, DTU.
- 1985: PhD in Numerical Analysis, DTU.
- 1996: DrTechn in Numerical Analysis, DTU.

### Employments

- 1985: Research Fellow, Department of Numerical Analysis, DTU.
- 1985–1988: Research Associate, Astronomical Observatory, Univ. Copenhagen.
- 1988–1996: Senior Consultant, UNI•C.
- Since 1996: Professor, Department of Applied Mathematics and Computer Science, DTU.

### Employments Abroad

- 1986: Research Associate (6 months), Department of Computer Science, Stanford University, supported by a Fulbright Grant.
- 1988: Research Associate (1 month), Department of Mathematics, Oak Ridge National Laboratory, during the Numerical Linear Algebra Year.
- 1989: Research Associate (7 months), Dept. of Mathematics, UCLA.
- 1990: Visiting Scholar (1 month), Math. and Comp. Science Div., Argonne National Lab.
- 1992: Visiting Scholar (1 month), University of California, Berkeley.
- 2004: Visiting Scholar (1 month), Department of Mathematics and Computer Science, Emory University, Atlanta.
- 2006: Visiting Scholar (1 month), Dept. Mathematics, Tufts University, Medford.

## Awards

- 1990: BIT Prize for distinguished paper on numerical analysis in the journal BIT.
- 1994: Statoil Prize in recognition of the work in numerical analysis.
- 2005: ISI Web of Knowledge award as most cited Danish mathematician.
- 2015: SIAM Fellow in recognition of contributions to algorithms for rank-deficient and discrete ill-posed problems and regularization techniques.

## Publications

- 4 books.
- 1 edited book.
- 3 invited chapters.
- 100 papers in refereed journals.
- 53 conference papers etc.
- doctoral dissertation (defended at DTU 1996).
- 6 software packages.

## Management Experience

- Head of Scientific Computing Section 2001–2013.
- Principal Investigator of several FTP research projects since 2007.
- Principal Investigator of an ERC Advanced Grant project since 2012.

## Editorial Service

- SIAM Book Committee 2014–2019.
- SIAM Journal on Scientific Computing 2014–

## Professional Memberships

- SIAM, Society for Industrial and Applied Mathematics (USA).
- Danish Academy of Technical Sciences.
- Danish Academy of Natural Sciences.

## Post Doc Supervision

- Hans Henrik B. Sørensen (2009–12).
- Fabrice Delbary (2010–12).
- Martin S. Andersen (2012–14).
- Jakob Sauer Jørgensen (2012–14).
- Lauri Harhanen (2015–17).
- Jürgen Friel (205–17).

## Ph.D. Students

- Susanne M. Balle (scientific computing; finished 1995).
- Søren Holdt Jensen (signal processing; finished 1995).
- Peter Søren Kirk Hansen (signal processing; finished 1998).
- Ole Møller Nielsen (scientific computing; finished 1998).
- Rasmus Munk Larsen (scientific computing; finished 1998).
- Tim Hultberg (scientific computing; finished 2000).
- Andreas Percy Schumacher (inverse acoustic problems; finished 2000).
- Preben Kidmose (signal processing; finished 2001).
- Ann-Charlotte Berglund (inversion algorithms; finished 2002).
- Thorkild F. Pedersen (signal processing; finished 2003).
- Michael Jacobsen (inversion algorithms; finished 2004).
- Jan M. Rasmussen (boundary control, with Dept. of Mathematics; finished 2004).
- Esben Høgh-Rasmussen (large-scale tomography; finished 2006).
- Toke Koldborg Jensen (iterative inversion algorithms; finished 2006).
- Peter Søndergaard (wavelet analysis, with Dept. of Mathematics; finished 2007).
- Hans Henrik B. Sørensen (computational nano-science; finished 2008).

- Jesper Rasmussen (boundary control, with Dept. of Mathematics; finished 2009).
- Jakob Heide Jørgensen (tomography; finished 2013).
- Anders Skajaa (convex optimization).
- Oscar Borries (large-scale electromagnetics).
- Sara Soltani (tomography).
- Mikhail Romanov (tomography).
- Federica Sciacchitano (image reconstruction).
- Hari Om Aggrawal (tomography).

### **Current Research Funding**

- Otto Mønstedts Fond (Visiting professor: Todd Quinto).
- High-Definition Tomography (ERC advanced grant).
- Improved Impedance Tomography via Hybrid Data (Danish Research Council grant).
- Nano-Scale Design Tools for the Semiconductor Industry (Danish Research Council grant).

### **Previous Funding**

- CAP: Center for Applications of Parallel computers (SNF grant).
- CSI: Computational Science in Imaging (FTP grant).
- Desktop Scientific Computing on Consumer Graphics Cards (PI – FTP grant).
- DIIG: Danish Interdisciplinary Inversion Group (SNF grant).
- DINA: Danish Informatics Network in the Agricultural Sciences.
- Electrical Impedance Tomography (VKR Post Doc).
- EPOS: Efficient Parallel algorithms in Optimization and Simulation (PI – SNF grant).
- MECOBS: Model., Est. and Control of Biotechnological Systems (NABIIT grant).
- nanoPar: Parallel Algorithms for Computational Nano-Science (FTP grant).
- NATO Collaborative Research Grants (twice) in signal processing algorithms.
- Partial Differential Equations and Applied Functional Analysis (SNF grant).
- SASI: Stabilization Algorithms for Large-Scale Inversion (PI – SNF grant).
- SCOSI: Scientific Comp. in Optimization, Simulation, and Inversion (SNF grant).
- WAVES: Wavelets in Audio/Visual Electronic Systems (STVF grant).